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## The Nic Nac Crystal Radio

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### How It Works

Radio signals are travelling through the atmosphere all the time. This simple radio receiver has been designed to capture them, and turn them into sound waves, so that you can hear what's going on. The Aerial and Earth wires form a return signal path from the AM transmitter, for these signals, and they are then fed into the coil and capacitor. This arrangement is known as a 'tank' circuit, because it stores radio energy, much in the same way your family car's tank stores petrol. The combination of a certain sized capacitor (68pF) and the amount of turns on the coil (around 120 turns) determines the frequency you will receive at. The Diode changes the signal from a radio one, to an audio one, and the Crystal Earphone changes the audio signal into sound waves that you can hear. the resistor adds stability by helping to prevent the Earphone from occasional 'dropout'.

### Building The Radio

You'll need all the components listed below and a Tic Tac lolly box. Start by mounting the earphone jack into the lid of the box and then solder up each of the components into a tidy version of the 'rat's nest' construction method. Make sure you use a crocodile clip as a heat sink for the diode when soldering - they're pretty sensitive devices to heat. Then take the coil and remove the ferrite rod from inside it. Take the ferrite balun core and place one end of the plastic stick (obtained by cutting off both ends of a cotton bud) and glue it inside the hole, with its end level with the end of the balun core.

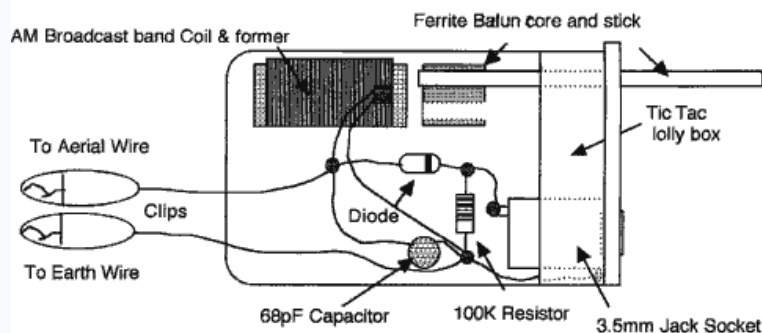


Diagram 2. Place balun inside coil former and use the stick to slide it up and down inside the coil to tune the Nic Nac Radio.

### Experimenting With The Radio

You can perform a number of experiments with your new radio receiver, so try the following experiments and have lots of fun while you do:

1. Try hooking up your Aerial wire first, without the Earth wire, to see if you're close enough to a radio station, not to need the Earth wire.
2. Try using different things for an Aerial, instead of the long wire - e.g.: a wire clothes line, a Hills Hoist clothes line, a metal window frame, a metal security door, a cyclone fence, bedsprings etc.
3. If you live really close to a radio transmitter, try rotating the Crystal Radio without an Aerial or Earth wire, to see if you can pick up these local stations.

I hope that you have as much fun making the **Nic Nac Radio**, as I did in designing it.

design by **the manikin**

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